

Water: Teacher's topic guide

God is Provider Year 4

Spiritual Awareness

Genesis 1:1-2 tells us that in the beginning, when God created the universe, a raging ocean covered everything and there was total darkness. The power of God was moving over the water and on the first day He created light.

According to the Bible, the earth was formed out of water, and was not a molten ball in the beginning, as we are told by evolutionists.

On the second day God divided the water in two. This was the water above, (the atmosphere), and the water below. The water vapour above was called 'sky'. This happened in the second 24-hour day of creation. No rain fell until the time of the Great Flood.

God's power is expressed in the greatness of the creation. We see this in the oceans, and powerful weather forces. This powerful God cares about me individually and provides for me. Without water there would be no life.

Values: Our response to 'God is a Provider'

- **Thankfulness** to God for the things He provides, and thankfulness to parents for the things they provide
- **Generosity**: Sharing with others the things that God has provided
- **Responsibility** in using wisely all that God has provided
- **Contentment** – knowing the difference between our needs and our wants

Outcomes: Students will

- understand that the earth was formed out of water, and was not originally a molten ball as the evolutionists tell us
- understand the importance of water to life
- explain the water cycle
- understand some of the properties of water
- compare how water reacts with different materials

Bible stories and passages

Genesis 1 - The creation

1 Kings 17:2-6 - Elijah fed by ravens in time of drought.

2 Kings 4: 42-44 - Elijah multiplies bread.

Exodus - 16,17 - Provision for the Israelites in the desert.

Genesis 6-8 – The Great Flood

Psalms 104:5-18 – God's dealing with water during and after the Great Flood.

Matthew 14:22-32 Jesus walks on water. (Jesus' power over creation)

Mark 4:35-41 - Jesus calms the storm.

Bible verses

Psalms 93:4 - The Lord rules... greater than the roar of the oceans, more powerful than the waves of the sea.

Job 36:22 – Remember how great is God's power. He is the greatest teacher of all.

Job 36:27-28 – It is God who takes water from the earth and turns it into drops of rain. He lets the rain pour from the clouds in showers for all mankind.

Psalm 104:13 – From the sky you send rain on the hills, and the earth is filled with your blessings.

Key Questions

What was the earth formed out of? (Genesis 1:1-2)

What did God do with the water on day 2 of the creation

Why did God create water?

What would the world be like without water?

How do we get water?

What is water made of?

What is a liquid?

What do we call water when it is solid?

What do we call water when it is a gas?

How can we thank God for all that He has made?

Activities

- Discuss the basic needs of life, of which water is one. Make a list of our needs and our wants, (the things that are not necessary)
- Read Genesis 1:1-2 and discover how the earth was formed out of water.
- Make a chart showing our dependence on water, e.g. for drinking; for plant survival; for washing.
- Conduct experiments with plants to show their dependence on water.
- Measure rainfall.
- Conduct evaporation / condensation experiments.
- Observe water in three states of matter.
- Study and chart cloud cover and rainfall.
- Classify cloud types.
- Produce a poster that shows how the Water Cycle works. Make sure it has a glossary of terms used.
- Study the effects of drought experienced in different parts of the planet.
- Discuss ways of helping and supporting people who suffer from major disasters such as flood, drought and famine.
- Discuss water conservation. Make a table to record your use of water during a typical day. Compare your use with other areas around the world.
- Identify water catchments. Explain how water gets to our homes. Research the water collection and storage system in your area. Write a report on this.
- Conduct floating and sinking experiments.
- Conduct experiments to see how water soaks into different materials.
- Observe how long it takes for wet materials to dry. Where did the water go?
- Discuss the effects of pollution upon our water. Write a letter to the government about pollution in some waterways around Fiji. Suggest ways in which you think the damage can be repaired.
- Create a collage showing the various uses of water for recreation.
- Design something practical that will purify water.
- Research how humans have used water over history. Including how water has been used for power in the past and the future.
- Construct a fact sheet about water erosion and what is being done to solve the problem in various places.

Assessment

1. Write up your experiments that show:
 - a) how water exists in the three states of matter
 - b) that plants depend on water
 - c) that water can make some objects float
 - d) that water will soak into some materials

2. What have I learned from the study of water...
 - about God?
 - about doing what God wants me to do?
 - about the Bible?

Learning Connections

Art: Observe how thin water colour paints and dyes soak into dry / wet paper.

Health: importance of drinking water; water for washing; uses of water

Social Studies: water conservation, especially in places that suffer from drought

Thinking skills: Imagine you are marooned on a desert island. How will you find water?

Beacon Media student research cards: Water

Biography: Makea

Values education Year 4

God is Provider

Contentment

We feel peaceful and content knowing that God is our provider. We are thankful for all He provides and don't feel pressured to own lots of material things that we don't really need.

Contentment is...

- being thankful for all that God has done for me
- being thankful for all that God has provided for me
- feeling peaceful inside, knowing that God is taking care of me
- resting in God's care

Activities

1. When do you think people are most content? Choose from the list:

- when they have lots of money
- when they are having a good time
- when they are trusting in God
- when they know they are cared for

2. When do you feel content?

3. When have you felt the opposite?

4. It is not wrong to want to have material goods if

5. It is wrong to want material goods if

What does the Bible say about contentment?

Matthew 6:25-34 Do not worry about tomorrow.

John 14:1-3, 18, 25-27 *Do not let your hearts be troubled. Trust in Me.*

Phil 4:12-14 Paul says that he knows what it is to be content.

Hebrews 13:5 Be free from the love of money.

Practical Science Year 4

God is Provider

Topic: Water

Making a solution; evaporation

What you will need:

Some sugar

Some hot water from a kettle

Glass jars

A spoon

A saucepan and a hotplate

See how many teaspoons of sugar will dissolve in hot water.

Note: Due to hot water involved, this experiment is for teacher demonstration only.

What to do

1. Place a spoonful of sugar in the hot water and stir. The sugar melts. This is a *solution*.
2. Take another jar and place 4 teaspoons in hot water and stir.
3. Take another jar and place 6 teaspoons in hot water and stir.
4. Keep adding more and more sugar until it won't dissolve anymore. When this happens, the solution is *saturated*.
5. Now heat the sugar solution in a saucepan on the stove until boiling. Using oven gloves, place a large plate over the saucepan and collect some steam. Get someone to taste the water collected on the plate. Does it taste like sugar?

Record the experiment:

What did you do?

What did you see?

Why did this happen?

Practical Science: Water

Surface tension: make a paper clip float

<http://www.sciencebob.com/experiments/paperclip.php>

What you will need

- clean dry paper clips
- tissue paper
- a bowl of water
- pencil with eraser

What to do

1. Fill the bowl with water
2. Try to make the paper clip float...not much luck, huh?
3. Tear a piece of tissue paper about half the size of a dollar bill
4. GENTLY drop the tissue flat onto the surface of the water
5. GENTLY place a dry paper clip flat onto the tissue (try not to touch the water or the tissue)
6. Use the eraser end of the pencil to carefully poke the tissue (not the paper clip) until the tissue sinks. With some luck, the tissue will sink and leave the paper clip floating!

How does it work?

How is this possible? It is possible because of SURFACE TENSION. Basically, it means that there is a sort of skin on the surface of water where the water molecules hold on tight together. If the conditions are right, they can hold tight enough to support your paper clip. The paperclip is not truly floating, it is being held up by the surface tension. Many insects, such as water striders, use this "skin" to walk across the surface of a stream.

Make it an experiment

The project above is a DEMONSTRATION. To make it a true experiment, you can try to answer these questions:

1. How many paperclips can the surface tension hold?
2. Does the shape of the paperclip affect its floating ability?
3. What liquids have the strongest surface tension?
4. Can the surface tension of water be made stronger? (try sprinkling baby powder on the surface)

Practical Science: Water

Make an Egg Float in Salt Water

<http://www.sciencekids.co.nz/experiments/floatingeggs.html>

An egg sinks to the bottom if you drop it into a glass of ordinary drinking water but what happens if you add salt? The results are very interesting and can teach you some fun facts about density.

What you'll need:

- One egg
- Water
- Salt
- A tall drinking glass

Instructions:

1. Pour water into the glass until it is about half full.
2. Stir in lots of salt (about 6 tablespoons).
3. Carefully pour in plain water until the glass is nearly full (be careful to not disturb or mix the salty water with the plain water).
4. Gently lower the egg into the water and watch what happens.

What's happening?

Salt water is denser than ordinary tap water, the denser the liquid the easier it is for an object to float in it. When you lower the egg into the liquid it drops through the normal tap water until it reaches the salty water, at this point the water is dense enough for the egg to float. If you were careful when you added the tap water to the salt water, they will not have mixed, enabling the egg to amazingly float in the middle of the glass.

Art Year 4

God is Provider

Topic: Water

Biblical connection: God has provided water for life, through rainfall, rivers and lakes.

Bible art as a wall display:

Make a large display of the water cycle.

Psalm 136:1 Give thanks to the Lord for He is good

1. Drawing, painting and collage

Ask students to:

- Using oil pastel or crayon, make line drawings of patterns that water can make: swirls, waves, spray, bubbles. When finished, cover the page with a thin blue wash.
- Draw their favourite water experience.

2. Painting

- Experiment with adding water to paint. Try different techniques with thin paint, e.g. blowing with straws, merging colours
- Paint a scene: "a rainy day"

3. Dying

- Use water to make dyes, e.g. boil onion skins, water down food colourings. Try some tie dying with washed cotton fabric.

4. Printing

- Make bubble prints

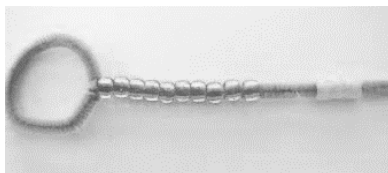
Instructions for bubble prints:

Pour 1 tablespoon of detergent plus water into a small, shallow bowl.

Add a few drops of food colouring to the bubble mix and stir well.

Place a bubble wand (shaped wire or pipe cleaner) in the coloured bubble mix, remove and blow bubbles towards your paper.

As the bubbles hit the paper and pop, they will leave interesting patterns.



Makea of Rarotonga

Biography



John Williams had set out from England in 1817, for the Pacific islands. He decided that he would build his own ship from the materials he could find on the island of Rarotonga where he was stranded in 1827. As he prepared for the task, gathering odd tools, looking for timber among the trees of the forest, employing some of the strong young men from the villages around to help him, one man, a chief named Makea, took a special interest in what he was doing.

“I’d like to help you, Mr. Williams,” he offered. “I’m big and strong and can lift those heavy timbers easily. Just tell me what to do and I’ll do it for you.”

Makea certainly was big and strong. He was about 190 cms. (6 feet 2 inches) tall. He was also very heavily built. His upper legs were the same size as the missionary’s body. His feet and legs were beautifully decorated with tattoos up to two inches above the knee. Similarly, his hands and arms were decorated up to and above the elbows. His movement and general appearance gave the impression that he was born to rule. It was said that before the coming of the Christian missionaries he ruled with violence and tyranny, but he abandoned his cruel ways to a great extent with the coming of the gospel.

After the boat, ‘*Messenger of Peace*’ was completed John Williams was preparing to return to Raiatea, Tahiti. He spoke to Makea, “Makea, you have been such a great help to me in the building of the ship. I’d like to do something for you as a reward. Would you like to come on the ship with me when we return to Tahiti?”

“Thank you, Mr. Williams,” Makea responded enthusiastically, “that would be wonderful.”

So Makea visited Raiatea, Tahiti on the “*Messenger of Peace*” and became friendly with the local chiefs and people of Raiatea. They put on great feasts for him and generally showed him much kindness. But one chief began to doubt the missionaries.

“Why do you do so much for the missionaries?” he asked. “You don’t need to give them so much food, or work so much for them.”

Makea listened to these comments and began to act on them. He returned to Rarotonga in a small ship that was laden with food and presents from the Raiateans. When he arrived home, he was greatly puffed up with pride as he showed off his ship-load of goods. But his attitude to the missionary on Rarotonga, Aaron Buzzacott, had changed. Because Makea, the chief, was distant and not as helpful as he used to be, his people adopted the same attitudes. Aaron was feeling suddenly very unwelcome in the island. He called a meeting of the chiefs and the people and spoke plainly to them.

“There seems to be something different in the attitude of you people towards us. If we have offended you in some way, please tell us and we can make it right. If you are tired of having us on your island, then we can pack up and go to another island. There are plenty of other islanders who would be glad to welcome us and treat us more kindly than you are at present. We have made many sacrifices to come here for your good. The least you could do is show us a little kindness and respect in return.”

Aaron’s words had the desired effect and from then on the unhelpful attitudes were gone and friendliness and goodwill were restored. That evening Makea visited Mr. Buzzacott, a scripture portion in his hand. Holding it up Makea promised, “Mr. Buzzacott, don’t be sad or heavy hearted. From now on I will follow this.” Although Makea was sympathetic to the missionaries and could see the good that the Christian teaching brought to the community, he had no personal commitment to following in the Christian way. But a change was to come.

Two women came to Aaron for counsel. One was Makea’s wife and the other was a woman from Aitutaki. This woman, named Tapaeru, was very helpful in placing and protecting the first teachers on Rarotonga. Both women appeared very agitated and were obviously convicted of their sins.

“I feel so guilty and full of sins, Mr. Buzzacott,” cried Tapaeru, “would you allow me to confess some of them to you. The burden of them is too great.”

Most of the sins she confessed were sins of adultery, and some of them had involved her with Makea. The chief himself was suffering under his own guilty convictions. His brother, the ‘chief judge’ of the area under the mission’s system of law and order, had recently died. This had left Makea in the position of chief judge.

“But how can I judge others when I am guilty of the same sins myself?” he thought. Makea went to see Aaron. “I am in deep trouble,” he began. “I have had to judge several men recently and found them guilty of adultery. But you know that I have been guilty of the same sins. I have no right to judge another man when I am guilty myself.”

“You’re right, Makea,” responded Aaron, “What do you think you should do about it?”

“But Mr. Buzzacott, that’s not all I’ve done. There’s a lot more.” And Makea poured out a long list of other sins he had committed, making a clean breast of it all.

“You ask me what I think I should do.” he went on. “I shouldn’t have special treatment because I’m a chief. I should be tried for my sins the same as everyone else.”

Naturally, no-one from the local area was willing to act as judge of the judge and chief, Makea, so they called for the chiefs and judges of the two nearby mission stations to come.

A large crowd of people, chiefs, judges and onlookers, assembled at the entrance of Makea’s house, which was the usual place for trials. Makea stood up before them all and solemnly confessed his sins, as did Tapaeru. The highly-respected judge of the other mission station passed the sentence on them both. They were required to pay fines and they listened while the judge spoke to them of their need to sin no more, faithfully following the examples of scripture. This one act of total humility by their chief impressed and changed the people far more than many sermons or lectures from the authorities.

One Sunday Aaron preached about the story of Zacchaeus, emphasizing the need for restitution if anyone has done wrong to another person. This message brought a strong response. People came to the missionary’s house with goods they had stolen, either from Mr. Williams during his visit, or from Mr. Buzzacott. There were various tools, knives from the kitchen, plates, articles of clothing, bed sheets; it was a remarkable array.

“I’ve brought you a chicken, Mr. Buzzacott, because I kept your tools for so long,” said one.

“Here is some taro in this basket, Mr. Buzzacott. I’m sorry I stole your plates,” offered another.

So the stolen goods were returned and other gifts of restitution were offered and accepted.

Makea had not taken any goods, but he had robbed some of the lesser chiefs of their lands, placing his favourites as tenants on the land. He sent a message to all the people he had offended in this way.

“Would you all come to a feast I am preparing for you,” he requested.

The people all came for the feast, which was a wonderful array of pigs, chickens and taro cooked in the earth oven, spread out on banana leaves. They were wondering why they had been invited. After they had finished eating, Makea stood up before them, “I have done you many wrongs in the days before the Christian gospel came to our island. I took away your lands, but now I’m sorry I did that. Now we understand how the Creator God wants us to live I can’t keep your lands any longer. I want you to go back again to your own lands and stay on them. I promise that no-one will disturb you again.”

Every-one was amazed at this change in Makea’s attitude.

“What a wonderful thing is the gospel!” they cried.

It was these events that brought Makea to the place of commitment of his life to Christ.

“I must follow after God’s way truly, Mr Buzzacott,” he said. “Will you teach me all about God the Creator and His Son Jesus,” he begged. “I really want to know them in my heart. I also want to learn to read well, so I can read the scriptures.”

He attended the adult reading class every morning, sharing the group with a reformed sorcerer, a former heathen priest, and three old warriors, all of whom had been notorious in their day for their cruelties and ‘heathen abominations. If there was no one else to teach them, the most advanced students from the children’s school were placed in charge of this group of adults. It was truly an example of ‘a little child shall lead them’, as these children were to be seen teaching Makea and the older men the mysteries of reading and writing. After nearly two years of teaching Makea became a member of the church and from then on lived out his new-found faith in God.

Makea lived long enough after his conversion to prove the reality of the change brought about by having God in his life. As a chief he saw that the laws were enforced fairly for everyone. He had wide roads made to connect the villages. He prepared a list of prices for goods they traded in when whaling ships called. Previously the whalers had taken advantage of the islanders, but Makea wanted to see a fair deal for his people. The changes in his personality when he began to live the Christian life were so marked that he became highly respected by his islander people as well as Europeans.

“His rule began in times of fearful darkness and bloodshed. When it closed everything seemed changed”, wrote Aaron Buzzacott of Makea. “The customs, the manners, the habits, the worship, the life of his people, were all changed. Makea was an example of the mighty way in which God can change people.

Adapted from: *Mission Life in the Islands of the Pacific*, Rev A. Buzzacott, John Snow & Co., London, 1866

Water 1
Water for life

Student activities

All living things need water....the plants, the animals and us.
God created water to keep us alive.

People can only live for about 4 days without water.

Did you know that two-thirds of your body is made of water?

Think about where the water might be inside your body.

Water gives life. But Jesus said that there is a special kind of living water that only He can give. The living water that Jesus gives is the Holy Spirit. You can read about it in John 7:37 – 39.

Copy:

Jesus said, "Let anyone who is thirsty come to me and
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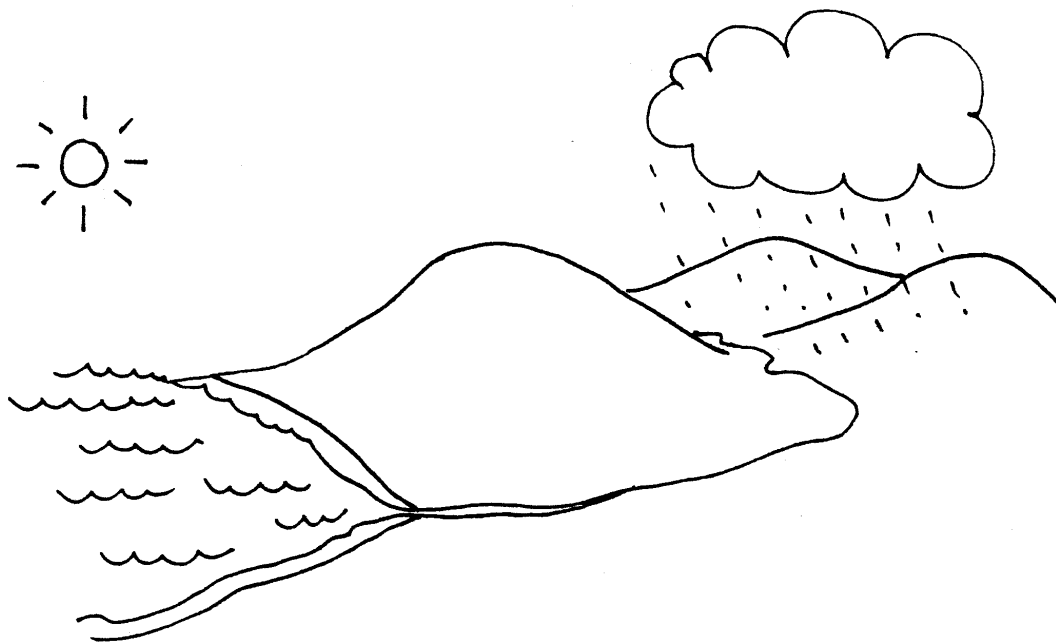
Water keeps all humans, plants and animals alive.
What kind of life does the Holy Spirit give us?

Water 2

The Water Cycle

Heat from the **sun** causes water to evaporate from the **sea**.
The **water vapour** rises and it becomes a **cloud**.
The water vapour changes to tiny water droplets when it is cooled.
These tiny droplets change to bigger droplets and it starts to **rain**.
The water goes into rivers and goes to the sea.
The water cycle starts over again.

Draw this diagram and use the words above in **BOLD** to label the diagram. Draw arrows to show how the water goes around.



Water 3

Water for life and health

Let's find out what happens to dirty water.

We use a lot of water keeping ourselves and our homes clean. BUT where does that dirty water go?

All of our household wastes (dirty water) wash away through underground pipes called sewage pipes. The pipes go to sewage farms where the dirty water is treated with chemicals and made safe to use again. If the sewage or dirty water is not treated properly it can be very dangerous and unhealthy.

In the old days, sewage or dirty water ran down open drains in the streets and into town water and rivers. Many people got sick and died because of the germs.

Today the pipes are underground and do not go near our water. After the sewage has been treated, some water can be used for the garden, (but not for drinking!)

Write the heading "**SEWAGE**" and answer the following questions in full sentences:

1. Where does all the dirty water from our homes go to?
2. What happens to the sewage once it gets there?
3. Why is this important?
4. What happened to the sewage in the old days?
5. What was wrong with this? What happened to the people in the old days and why?
6. Can we use sewage again after it is treated? What is it used for?

Water 4

Are you a good detective?

Add the correct vowels to complete this poem. It has to rhyme.

Clues: There are three As, one E, one I, three Os and one U.

SPL__SH, SPL__SH, SPL__SH,

Y__ __ H__V__ T__ W__SH!

Water 5

How we use water

Copy the drawings and write a sentence for each.



Water 6

Search for the words

Find the following words in the grid below:

Chemicals

Dishes

Hair

Pipes

Soap

Clean

Drains

Hands

Sewage

Teeth

Clothes

Germs

Healthy

Sick

Wash

Water

C	H	E	M	I	C	A	L	S	G	H
L	S	I	C	K	L	A	H	O	E	E
O	D	I	S	H	E	S	T	A	R	A
T	R	B	Z	H	A	I	R	P	M	L
H	A	N	D	S	N	U	W	P	S	T
E	I	T	E	E	T	H	A	I	V	H
S	N	W	A	T	E	R	S	P	I	Y
H	S	E	W	A	G	E	H	E	J	D
A	N	Q	U	T	I	V	O	S	T	E

Water 7

Write a poem

Dishes, dishes, dishes

Dishes, dishes, dishes,
Doing them is really against my wishes,
But if we let them build up high,
Nearly to reach the sky,
All the germs would think it was a good trick
And we would soon get very sick.

Dishes, dishes, dishes,
Doing them is a pain.
They keep coming round and round again.
But I'll help Mum
Because she doesn't have much fun
When she's the only one
Doing dishes, dishes, dishes

Now try writing your own poem about one of these:

1. dishes
2. showering
3. washing
4. water

Try to tell us something you think is important.



Water 8 Keeping clean

Make a poster about the importance of keeping clean and the ways we need to keep clean. This poster is to teach young children about keeping clean.

